AMATEUR SATELLITE REPORT

AMSAT's Newsletter for the Amateur Space Program.

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Amateur Satellite Report

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Prospects Loom For Insured Launch!

In a late-breaking development, AMSAT President W3IWI has announced that at least part of the Phase IIIB spacecraft will be insured. Intense negotiations in Europe have led to assurances that some insurance will be obtainable this time. (Phase IIIA, lost with the LO2 disaster three years ago, was uninsurable.)

W3IWI believes it is in AMSAT's interest to obtain additional insurance for the satellite. He suggests an additional $100,000 in coverage above the cost of the Phase III satellite project. Present replacement cost is well over $300,000. Tom indicated the additional insurance can be obtained for about $12,000. A massive, short-term fund drive has begun to pick up speed with W3IWI's announcement.

ALL members are asked to *dig in now* to help meet the insurance needs. Send your (tax deductible) checks to:

Phase III Insurance Campaign
P.O. Box 27
Washington, DC 20044

We need your help now!

Hamvention Sets New Mark

Although attendance at this year's Dayton Hamvention (29 Apr.-1 May) was apparently down from prior years, you would not have known it from the traffic at the AMSAT booth. A rainy weekend kept outdoor activities down to the benefit of those inside.

Heavy activity throughout the weekend pushed receipts over $5,000 for the first time. More than 50 new and renewing members signed up as well.

Attention focused on several new AMSAT offerings. The new T-shirts debuted as did the handsome new, all-brass belt-buckles. The AMS-81 tracking program for the Timex Sinclair 1000 was very popular. A raffle for an IC-720 was held.

The Friday (29 April) AMSAT forum hosted by W8GQW was well-attended. Speakers included N2CF, WA2LQQ, NK6K and G3AAJ. Ron, G3AAJ, Secretary of AMSAT-UK presented W3IWI, AMSAT President with a $2,000 check on behalf of the UK organization.

Staffing the booth were: W8GQW, W3IWI, W8JLE, K8OCL, K9LF, N2CF, WB5MPU, WDØEEL, G3AAJ, K9PVW, KA9Q, NK6K, W1HDX, WA6VGS, WA2LQQ. Thanks to all who made this a record-breaking success for AMSAT!

Left to right at booth, K8OCL (with back to camera), N2CF, W8GQW.

Short Bursts

• Meeting at Johnson Space Center, Houston, 16-17 May had NASA, ARRL and AMSAT officials advancing plans for Dr. Owen Garriott's "Ham In Space" mission on STS-9 this autumn. One of the main proponents NBC's Roy Neal, K6DUE, will assure wide press coverage working with the public relations officer of NASA, ARRL and AMSAT. Plans call for Astronaut Garriott to operate up to one hour per day using 2 meter HT and special antenna. QSL's will go to the lucky 500 or so who manage

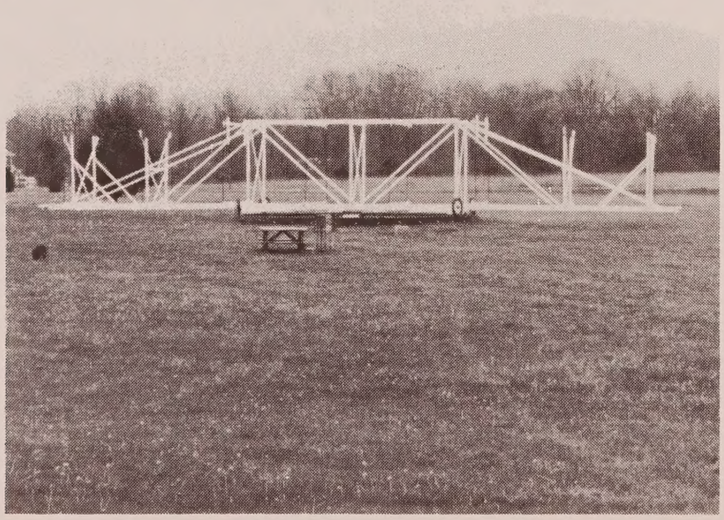
FLASH!

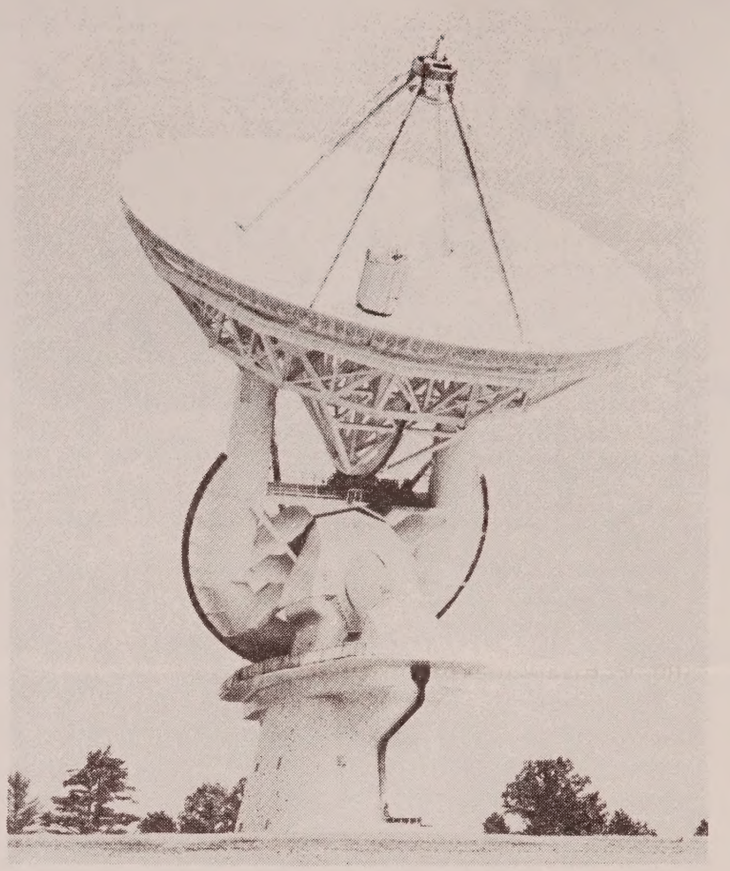
ESA says "L6 launches June 16!"

At press time the AMSAT launch support crews from around the world were converging on Kourou. Full details here and on AMSAT nets.

QSO; SWL cards to others who report reception. Operation will be between 145 and 146 MHz (exact frequencies to be specified later) using sophisticated, time-synchronized format. Some very senior national and international figures are expected to participate. More details next time.

- AMSAT has released the Phase IIIB telemetry equations. Look for them in *ASR* soon.
- G3YJO has released revised UO-9 telemetry equations; CCD camera tests were performed 28 April, 2, 9 May.
- Send AO-8 reception reports and SASE to W9KDR at ARRL HQ to receive AO-8 Fifth Anniversary stickers.
- AO-8 is in Mode J all the time currently to combat increasing battery management problems.
- Be sure to use Lower Sideband (LSB) on Phase IIIB transponder uplinks...but only after the transponders are cleared for general use; about 10 days to 4 weeks after launch.
- Corrections to Moon. BAS Program in *ASR*: 2070 QØ = 4.164593 (etc.); "9" replaces "=". Line 2710 DT = G9* etc.
- Midwest ARRL convention huge success thanks to WØRPK, WØCY, KØCY and new Iowa Area Coordinator, NØAN.
- N2CF urges all to take AMSAT to local hamfests. Call HQ (301-589-6062) or write for support kit.
- Two-meter local AMSAT Nets? Call or write HQ or W8GQW.
- Martha and new hubby N4QQ back from VP8 honeymoon; send thanks to all.
- *ASR* delays are regretable...but attributable to difficult travel schedule. Please QRX...we're catching up if ever-so-slowly...remember (ho-ho) it's only a hobby!
- RS-5/6/7/8 transponders are giving lots of service lately. Catching anything interesting?
- AMS-81 sales now exceed 200!
- Two entry-level technicians needed at ARRL HQ. Contact W4RI at 203-666-1541.





Jansky Celebration Success!

Radio Amateurs at the National Radio Astronomy Observatory (NRAO) at Green Bank, West Virginia, helped celebrate the Fiftieth Anniversary of Radio Astronomy's birth the weekends of 6-8 and 13-15 May. As previously announced, operations took place on 15 meters the first weekend and 70 cm EME operations took place the second weekend.

On the 15 meter operation, W3IWI reports over 250 QSOs completed using a replica of Jansky's original rotatable 20.5 MHz "Bruce Array." Among the rare DX worked were PZ, 5W, VU and ZD7. AMSAT stations worked included W6CG, AD6P, W6GC, WØRUE, WØCY, KO5I and WA2LQQ. (See photo.)

On the following weekend more than a dozen amateurs put the 140' NRAO radio telescope (see photo) on the amateur bands with a 70 cm EME weekend spectacular. More than 250 QSOs were made with about 40% of those ssb. Some ssb QSOs were "phone-patch quality."

The station at Green Bank operated for most of the event under the call K8HUH although W3IWI, WA4MVI and others operated under their own callsigns for a least one QSO. Tests performed during the operation proved the incredible sensitivity of the station. EME returns were heard when cw signals were as low as 100 mW and less than 1 watt on ssb.

Overall the operation was hailed a huge success and one of the best operations of its kind in years.

The entire event was videotaped and photographed. A review of the operation will be made to the Central States VHF Society meeting later this year. Additional photos of both operations will appear shortly in *Orbit* and in these columns as space allows.

Amateur Satellite Report's *Spotlight On: W2GFF*

Dick Peacock, W2GFF, is one of those hams with strongly held beliefs who is not afraid of working hard to effectuate those beliefs.

At a meeting of AMSAT and ARRL officials in Newington some time back, Dick expressed the thought that there should be a place to set down in usable form the lore that satellite users, and the "hard core" that builds the birds, have accumulated over the years.

The upshot was the commissioning of the Phase III Operations Manual under the guidance of—that's right—Dick Peacock. He has been working hard on the project ever since.

The Setauket, New York, resident is not an editor by profession but has an uncanny grasp of what is needed in a work of this kind, and the ability to organize and get the necessary material written.

The Caldwell, New Jersey, native got into hamming back in 1933, as a teenager. He and his brother, then also a ham, put up their first end-fed zepp on the day of Franklin D. Roosevelt's inauguration.

The station, at that time, consisted of a pair of 45s in a push-pull oscillator and a 24 detector feeding a 27 audio stage for a receiver.

Dick didn't say whether the 45s were or were not borrowed from the family BC set, as was often the case in those days.

Ham radio had much to do with starting W2GFF on his subsequent career. He became radio operator on one of United Fruit Co.'s banana boats for a time and later went with Pan American Airways as a flight radio operator.

It is said that National designed and built the SW3 at Pan Am's request. However these were long gone by the time Dick signed on.

But the airline was still using regenerative receivers of a later design at that time, Dick says.

Later, a stint in the maintenance end of aircraft radio led to a position in the quality assurance section of Aircraft Instrumentation Labs.

Dick's entry into the world of satellites came in 1976, after he developed a plotting device for determining various orbital parameters. He showed the plotter to K2OVS, who talked Dick into getting on the satellites.

Using an Ameco TX62 and an amplifier containing a single 4X150, Dick has worked WAS and is eagerly awaiting the arrival of a card from UAØ for confirmation of satellite WAC.

Dick says when he accepted the Operations Manual assignment, he outlined a skeleton or framework of what was required. This was gone over by a group of experts but was left essentially unchanged.

He says that the fleshing out of this skeleton is progressing nicely, but more is needed on a technical description of the satellite. Also needed is a glossary with definitions of words used in discussing satellites, and a description of orbital mechanics.

These must be newcomer-oriented and designed not to scare prospective users away.

W2GFF's interest in newcomer-oriented material stems from a belief that the availability of the Phase III satellite and the decline in the sunspot cycle will put many new users on the new bird.

Access to DX on a 24 hours per day, 365 days per year basis, with "conditions" having little effect, will no doubt have strong appeal for many not now using the satellites.

The relatively small antennas required for satellite work, as compared to the arrays used at HF, are also a point in the satellite's favor.

Dick envisions a "big turnaround" after Phase III goes up.

The operations manual and ham radio generally take up most of Dick's spare time, but he and his wife, Vera, still get out for an occasional round of golf.

Dick said he thought he had "found his niche" in his work at AIL, making sure various high-tech microwave devices work the way they were designed to work.

In that same vein, with Dick at the controls, AMSAT and the satellite user community can be sure the Phase III Operations Manual will work well—the way it was designed to work.

UoSAT S-Band Beacon Activated

Officials at the University of Surrey, England, announced recently the UoSAT-OSCAR 9 S-Band beacon in the amateur 2.4 GHz band had been activated for the first time since launch.

According to Program Manager Dr. Martin Sweeting, G3YJO, UO-9's UHF beacon "was activated on orbit 8942 and 8943 following satisfactory power-budget tests on orbit 8927."

At least two UK stations monitored the tests. G3WDG and G4KGC reported signals peaking 15 dB above the noise. Both stations used horn antennas with system noise figures approximating 3-4 dB, according to Dr. Sweeting.

Dr. Sweeting added that further tests may be expected "subject to further power budget analysis." Observers are advised to watch the UoSAT bulletin board schedule for notice of planned tests.

Orbit Predictions

By Phil Karn, KA9Q

noaa-8:
Wed May 25 00:58:50 1983 UTC: Ascending node at 81.9 west
Nodal period: 101.30171 min
Longitude increment: 25.324882 deg w/orbit
Element set 36, epoch: Sat May 7 05:49:25 1983 UTC

oscar-7:
Wed May 25 00:12:14 1983 UTC: Ascending node at 100.0 west
Nodal period: 114.93903 min
Longitude increment: 28.736713 deg w/orbit
Element set 480, epoch: Sun Feb 20 09:08:52 1983 UTC

oscar-8:
Wed May 25 01:27:46 1983 UTC: Ascending node at 105.1 west
Nodal period: 103.16768 min
Longitude increment: 25.794278 deg w/orbit
Element set 760, epoch: Fri May 13 12:37:46 1983 UTC

oscar-9:
Wed May 25 00:02:00 1983 UTC: Ascending node at 131.4 west
Nodal period: 94.67517 min
Longitude increment: 23.667614 deg w/orbit
Element set 468, epoch: Wed May 11 09:23:13 1983 UTC

rs-3:
Wed May 25 01:33:47 1983 UTC: Ascending node at 276.7 west
Nodal period: 118.51895 min
Longitude increment: 29.756511 deg w/orbit
Element set 66, epoch: Thu May 12 13:18:52 1983 UTC

rs-4:
Wed May 25 00:51:42 1983 UTC: Ascending node at 261.1 west
Nodal period: 119.39456 min
Longitude increment: 29.975548 deg w/orbit
Element set 109, epoch: Sat May 7 01:03:05 1983 UTC

rs-5:
Wed May 25 01:47:15 1983 UTC: Ascending node at 274.2 west
Nodal period: 119.55385 min
Longitude increment: 30.015379 deg w/orbit
Element set 88, epoch: Sat Apr 30 04:01:05 1983 UTC

rs-6:
Wed May 25 00:46:03 1983 UTC: Ascending node at 263.6 west
Nodal period: 118.71436 min
Longitude increment: 29.805394 deg w/orbit
Element set 54, epoch: Tue May 3 14:20:01 1983 UTC

rs-7:
Wed May 25 01:48:51 1983 UTC: Ascending node at 276.7 west
Nodal period: 119.19567 min
Longitude increment: 29.925804 deg w/orbit
Element set 105, epoch: Wed May 11 00:05:35 1983 UTC

rs-8:
Wed May 25 01:52:23 1983 UTC: Ascending node at 274.4 west
Nodal period: 119.76401 min
Longitude increment: 30.068001 deg w/orbit
Element set 223, epoch: Sun May 8 00:40:46 1983 UTC

Satellite: noaa-8
Catalog number: 13923
Epoch time: 83127.24265731
Sat May 7 05:49:26 1983 UTC
Element set: 36
Inclination: 98.7506 deg
RA of node: 157.2252 deg
Eccentricity: 0.0017557
Arg of perigee: 147.0913 deg
Mean anomaly: 213.1383 deg
Mean motion: 14.22290766 rev/day
Decay rate: 2.15e-06 rev/day^2
Epoch rev: 562
Semi major axis: 7197.179 km
Anom period: 101.245121 min
Apogee: 837.836 km
Perigee: 812.564 km

Satellite: oscar-7
Catalog number: 7530
Epoch time: 83051.38116239
Sun Feb 20 09:08:52 1983 UTC
Element set: 480
Inclination: 101.4018 deg
RA of node: 55.0594 deg
Eccentricity: 0.0012395
Arg of perigee: 107.4687 deg
Mean anomaly: 252.7737 deg
Mean motion: 12.53382218 rev/day
Decay rate: -6e-08 rev/day^2
Epoch rev: 37819
Semi major axis: 7829.761 km
Anom period: 114.889136 min
Apogee: 1480.019 km
Perigee: 1460.609 km

Satellite: oscar-8
Catalog number: 10703
Epoch time: 83133.52623269
Fri May 13 12:37:47 1983 UTC
Element set: 760
Inclination: 98.7578 deg
RA of node: 147.8906 deg
Eccentricity: 0.0007964
Arg of perigee: 63.5083 deg
Mean anomaly: 296.6894 deg
Mean motion: 13.96553612 rev/day
Decay rate: -1.6e-07 rev/day^2
Epoch rev: 26440
Semi major axis: 7285.299 km
Anom period: 103.110972 min
Apogee: 929.689 km
Perigee: 918.085 km
Translate freq: 581.0974 mhz
Invert: 1
Beacon: 435.0965 mhz

Satellite: oscar-9
Catalog number: 12888
Epoch time: 83131.39112582
Wed May 11 09:23:13 1983 UTC
Element set: 468
Inclination: 97.5426 deg
RA of node: 97.4155 deg
Eccentricity: 0.0004573
Arg of perigee: 78.1324 deg
Mean anomaly: 282.0193 deg
Mean motion: 15.21802974 rev/day
Decay rate: 5.721e-05 rev/day^2
Epoch rev: 8820
Semi major axis: 6880.058 km
Anom period: 94.624602 min
Apogee: 525.188 km
Perigee: 518.895 km
Beacon: 145.8250 mhz

Satellite: rs-3
Catalog number: 12997
Epoch time: 83132.55477844
Thu May 12 13:18:53 1983 UTC
Element set: 66
Inclination: 82.9624 deg
RA of node: 355.7825 deg
Eccentricity: 0.0059579
Arg of perigee: 107.6772 deg
Mean anomaly: 253.0853 deg
Mean motion: 12.15575910 rev/day
Decay rate: 4e-08 rev/day^2
Epoch rev: 6210
Semi major axis: 7991.325 km
Anom period: 118.462367 min
Apogee: 1679.914 km
Perigee: 1584.691 km

Satellite: rs-4
Catalog number: 13000
Epoch time: 83127.04381096
Sat May 7 01:03:05 1983 UTC
Element set: 109
Inclination: 82.9647 deg
RA of node: 3.7017 deg
Eccentricity: 0.0017205
Arg of perigee: 184.4584 deg
Mean anomaly: 175.6330 deg
Mean motion: 12.06658280 rev/day
Decay rate: 4e-08 rev/day^2
Epoch rev: 6098
Semi major axis: 8030.637 km
Anom period: 119.337846 min
Apogee: 1666.436 km
Perigee: 1638.802 km

Satellite: rs-5
Catalog number: 12999

Satellite: rs-5
Catalog number: 12999
Epoch time: 83120.16742657
Sat Apr 30 04:01:06 1983 UTC
Element set: 88
Inclination: 82.9681 deg
RA of node: 8.2360 deg
Eccentricity: 0.0009302
Arg of perigee: 233.4809 deg
Mean anomaly: 126.5394 deg
Mean motion: 12.05048561 rev/day
Decay rate: 1.1e-07 rev/day^2
Epoch rev: 6007
Semi major axis: 8037.784 km
Anom period: 119.497259 min
Apogee: 1680.721 km
Perigee: 1665.768 km

Satellite: rs-6
Catalog number: 13002
Epoch time: 83123.59724482
Tue May 3 14:20:02 1983 UTC
Element set: 54
Inclination: 82.9627 deg
RA of node: 1.8367 deg
Eccentricity: 0.0050379
Arg of perigee: 141.2646 deg
Mean anomaly: 219.2001 deg
Mean motion: 12.13556854 rev/day
Decay rate: 4.32e-06 rev/day^2
Epoch rev: 6091
Semi major axis: 8000.184 km
Anom period: 118.659459 min
Apogee: 1670.590 km
Perigee: 1589.982 km

Satellite: rs-7
Catalog number: 13001
Epoch time: 83131.00388133
Wed May 11 00:05:35 1983 UTC
Element set: 105
Inclination: 82.9629 deg
RA of node: 0.3421 deg
Eccentricity: 0.0022005
Arg of perigee: 139.8076 deg
Mean anomaly: 220.4669 deg
Mean motion: 12.08672154 rev/day
Decay rate: 4e-08 rev/day^2
Epoch rev: 6156
Semi major axis: 8021.717 km
Anom period: 119.139007 min
Apogee: 1669.996 km
Perigee: 1634.693 km

Satellite: rs-8
Catalog number: 12998
Epoch time: 83128.02831653
Sun May 8 00:40:47 1983 UTC
Element set: 223
Inclination: 82.9612 deg
RA of node: 5.0159 deg
Eccentricity: 0.0018064
Arg of perigee: 263.0901 deg
Mean anomaly: 96.8142 deg
Mean motion: 12.02933252 rev/day
Decay rate: 4e-08 rev/day^2
Epoch rev: 6091
Semi major axis: 8047.201 km
Anom period: 119.707390 min
Apogee: 1704.352 km
Perigee: 1675.279 km

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